TAUNTON COLLEGE SCHOOL.—In reference to our article on Taunton College School, Mr. C. P. Bahin, of Heaton Moor, Stockport, writes that science was taught at that school before Mr. Tuckwell's time. Mr. Bahin forwards us a prospectus of the school for the year 1860, and what position was allotted to science at that time in the school may be inferred from the fact that "Physical Science" comes in as the last subject in the General Department after Fortification, that no mention is made of it in the Classical Department, and that "Monthly Lectures on General and Scientific Subjects are given during the winter season; and in summer, occasional excursions, with a view to the practically illustrating the various branches of Natural History, are taken in one of the weekly half-holidays." This is exactly the state of things we have all along protested against, and which Mr. Tuckwell has managed so successfully to remedy in the case of the Taunton School.

SCIENTIFIC SERIALS

Reale Istituto Lombardo di Scienze e Lettere. Rendiconti, vol. x., fasc. ix. and x.—On the equation of the eikosahedron in the resolution of equations of the fifth degree, by M. Klein.—Further notices and observations on the comets of 1877, by M. Schiaparelli.—On the morphological nature of distigma, by M. Maggi. —Case of fracture of the neck and diaphysis of the femur, by M. Scarenzio.—The combustibility of tobaccos, by M. Cantoni.—Stratigraphical observations on the Province of Pavia, by M. Taramelli.—Experimental researches on heterogenesis, by MM. Maggi and Cantoni.—On the relative length of the index and ring finger of the human hand, by M. Mantegazza.

Fasc. xi.—Contributions to the morphology of Amphizonella, by M. Maggi.—On the Arachnida of Greece, by M. Pavesi.—On the tension of induced electricity, by M. Macaluso.—The albuminous matter of urine, by M. Pellogio.—On the relative and specific weight of the cerebellum and the arch of the cranium, by MM. Colombo and Pizzi.

SOCIETIES AND ACADEMIES

LONDON

Chemical Society, June 21.—Dr. Gladstone in the chair. The president announced the following grants from the Research Fund of the Society: Dr. Wright, 50*l.*; Mr. Neison, 25*l.*; Mr. C. Williams, 25*l.*; Mr. G. Harrow, 10*l.* The following papers were read: On diamyl, by H. Grimshaw. This substance was prepared by the action of sodium on amyl bromide. It boils at 160°. A chloride and acetate were obtained and investigated. By the action of caustic potash on the acetate, two alcohols were formed boiling at 202° and 212°. On oxidation acids were formed.—On the action at a high temperature of certain volatile metallic chlorides on certain hydrocarbons, by Watson Smith. *a.* The author investigates the action of antimony trichloride, and tin tetrachloride on naphthalin, benzene, and toluene, when these substances are severally passed in the state of vapour through red hot tubes. Benzene and tin tetrachloride gave a very large yield of diphenyl in one distillation. Toluene and antimony trichloride gave oils boiling at 270–320°. Naphthalin and antimony trichloride: 77 grm. of the former yielded 24·2 grm. of yellow crystalline isodinaphthyl; with tin tetrachloride, in addition to a large yield of isodinaphthyl, a reddish oil, and a citron yellow powder were obtained. *b.* Isodinaphthyl sulpho-acids and salts with certain other derivatives; the α and β sulpho-acids were prepared, also an oxydinapthyl, a nitro-substitution product, and a cyanogen derivative. *c.* A new dinaphthyl. In the purification of crude isodinaphthyl by petroleum spirit, a fine red solution was obtained; from this the author succeeded in separating three substances melting at 75°, 147°, and 253°; the latter is probably Lossen and Otto's polymeric dinaphthyl, the second is an isomeric dinaphthyl already obtained by Lossen, the first is a new isomeric dinaphthyl.—On the action of alkaline oxalates on the earthy carbonates, and of solutions of alkaline carbonates on the earthy oxalates, by Watson Smith. The author having observed that when a solution of ammonium oxalate was brought into contact with chalk or powdered marble, an ammoniacal odour at once became apparent, has carefully measured the extent of this and similar reactions.—Note on thallious platinocyanide, by R. J. Friswell and A. J. Greenaway. In 1871 one of the authors stated that the above substance was colourless, but that a compound of it with thallious carbonate crystallised in dark red needles reflecting a green metallic lustre. Carstangen having confused the two substances and stated that thallious platinocyanide crystallised in blood red needles, the authors have re-investigated the question, and fully confirmed the statements made in 1871.—On crystallised barium silicate, by E. W. Prevost. Pisani having stated that this substance crystallises in barium hydrate reagent bottles, the author has examined similar crystals, and finds that they consist of barium hydrate.—A note on anethol and its homologues, by W. H. Perkin. Methylparoxyphenylacrylic acid, when boiled in a bulb tube, furnishes a distillate, consisting of an oil with the formula $C_9H_{10}O$, which on oxidation yields apparently anisic acid. Methylparoxyphenylcrotonic acid yields anethol, methylparoxyphenylangelic acid yields a similar substance.—Note on persulphocyanic acid, by R. W. Atkinson, Japan. The author discusses the constitution of the above substance, and after investigating various silver and mercury compounds, concludes that the formula proposed by Glutz is probably correct.—On the oxidation products of the aloins, by A Tilden, D Sc. Barbaloin and socaloin when oxidised by potassium dichromate and sulphuric acid, yield a yellowish substance, which the author proposes to call aloxanthin, having the formula $C_{15}H_{10}O_6$. This substance, when treated with fuming nitric acid, yields a yellow nitro-acid, having the properties of aloetic acid.

Geological Society, June 6.—Prof. P. Martin Duncan, F.R.S., president, in the chair.—The Rev. Charles Leach, William May, John W. Myers, and John Fletcher Pagen, were elected fellows of the Society. The following communications were read: On the rank and affinities in the reptilian class of the *Mosasauridæ*, Gervais, by Prof. R. Owen, C.B., F.R.S. The author stated that while the Mosasaurians had been originally referred to the Cetacea by Camper, then to Crocodilia by Faujas de St. Fond, and to the Lacertilia by Cuvier, Prof. Cope had recently thought he recognised in them Ophidian affinities, spoken of them as "sea-serpents," and formed of them an order called Pythonomorpha. He then discussed in detail the various characters presented by the remains of these animals. The distinctive characters did not appear to the author to be sufficient for ordinal rank, and with P. Gervais he regarded the Mosasauridæ as a family of Lacertilia equivalent to the Iguanodontidæ and Megalosauridæ in the order Dinosauria. The order Lacertilia among reptiles, being equivalent to the order Carnivora or Feræ among Mammals, the Mosasaurians would be the equivalents of the seals in the latter.—Note on the occurrence of the remains of *Hyænarctos* in the red crag of Suffolk, by Prof. William Henry Flower, F.R.S. The traces of *Hyænarctos*, described by the author in this paper, consist of a right and a left first upper molar, which were obtained from the Red Crag of Waldringfield, and are so much alike, that but for the former being rather more worn, they might have belonged to the same animal. On comparison these teeth were found to show no appreciable difference from the corresponding teeth of the original specimen of *Hyænarctos sivalensis* from the Sewalik Hills, and hence the author did not venture to regard them as representing a species distinct from the Indian one.—On the remains of *Hypsodon*, *Portheus*, and *Ichthyodectes* from British cretaceous strata, with descriptions of new species, by E. Tulley Newton, F.G.S., of H.M. Geological Survey.—On the precarboniferous rocks of Charnwood Forest, Part I., by the Rev. E. Hill, F.G.S., and the Rev. T. G. Bonney, F.G.S. The authors described a mass of slates, grits, and volcanic breccias, accompanied by some knolls and dykes of syenite, spread over a space of about fifty square miles. They showed that the patches marked on the Survey Map as greenstone of Bardon, Birchwood, and Buck Hill, except a very small portion of the latter, are really altered rock; that the syenite knoll of Bawdon Castle carries a mass of breccia in its centre; and that the area of syenite in Bradgate House Woods must be enlarged. Several writers have noticed that part of the porphyritic region of the north-west corner is altered rock. The authors showed that there is in it no igneous rock at all, and that the same is the case with every one of the smaller patches marked as porphyry on the Survey Map. All are volcanic breccias, ashes, or agglomerates, some of enormous size. The extent to which volcanic materials enter into the rocks of the district is remarkable. The authors endeavoured to correlate the stratified rocks, and adduced evidence to prove that the pebble and ash-beds of Forest Gate, the grit and pebble-beds of the Hanging Rocks, the similar beds in the grounds of Mr. A. Ellis, at Swithland, and the quartzites of Bradgate Stable Quarry, Groby Pool, and Steward's Hay Spring, form one horizon; the slate breccias of Blores Hill, Bradgate, Ulverscroft Mill, Markfield, Bardon, and High Towers, a second; the coarse ash-beds of Benscliff, Chitter-

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man Hill, Timberwood Hill, and the Monastery, a third; and the quartzose rocks of Charley Wood, Charley, the Old Reservoir, and Blackbrook, a fourth. Hence they showed that the beds are considerably dislocated near the syenites, which removes the main objection which previous writers have urged against these being intrusive; and they described the evidence they have obtained as to this being their real nature. This evidence included the description of actual contacts of igneous and sedimentary rock seen at two points in the wood south of Bradgate House, and at a third in Bradgate Park. They propose, in a continuation of the paper, to touch upon the faults, and to describe in greater detail the microscopic structure of the rocks.

Photographic Society, June 12.—J. Glaisher, F.R.S., president, in the chair.—A paper was read by Mr. J. R. Sawyer on the action of light, temperature, and atmosphere upon pigmented sensitive tissues; showing that when once the action of light had been set up upon the sensitive pigmented tissue (used in carbon work) the same action was *continued* in darkness and exclusion from the atmosphere; by this action an increased power and facility of producing large numbers of the same subject was obtained; as also the possibility of producing different tones of coloured pigments, by this important discovery, which the paper described.—A paper by Mr. Herbert B. Berkeley—notes on the theory and practice of emulsion processes—was read, relating to the use of zinc bromide in emulsions.—Capt. Abney, R.E., F.R.S., followed with a note giving the details and results of his own investigations upon the same subject.—Mr. R. W. Thomas, F.C.S., read a note on the nitrate of silver bath.

Vienna

Imperial Academy of Sciences, March 8.—On some reactions of amido-acids: on the copper salts of leucin, tyrosin, asparagin acid, and glutamin acid, on the dissolving power of amido-acids for cupric oxide in alkaline liquid, by M. Hofmeister.—On a modification in the determination of vapour densities, by MM. Goldschmidt and Ciamician.—Further experiments on galvanic expansion, by M. Exner. The elongations through the galvanic current were not markedly different from those which would arise from heat developed by the current; the differences did not amount to three per cent. of the whole expansion, and were partly positive, partly negative. Hence the author pronounces against a galvanic expansion.—On the teeth-apparatus in frogs and their larvæ, by M. Wajgel.—Description of a steerable flying machine in form of an eagle, by M. Grois.—The fossil bryozoa of the Austro-Hungarian miocene, by M. Manzoni.—On cosmic vulcanism, by M. Tschermak. He thinks the hypothesis most applicable to it is that which explains volcanic phenomena on the earth by gases and vapours, which have been held absorbed in the supposed liquid interior, but developed in the gradual solidification.—On point systems in rational space curves of the fourth order, by M. Weyr.—On polypes and jelly fishes of the Adriatic, by M. Claus.—On *Sagartia troglodytes* Gosse, by M. v. Heider.—On diffusion of gases through clay cells, by M. Puluj. He finds, *inter alia*, that water vapour diffuses more quickly than air (and here contradicts Dufour's statement that dry air diffuses more quickly than moist). Vapours diffuse approximately in inverse ratio of the fourth root of their densities.

Paris

Academy of Sciences, June 25.—M. Peligot in the chair.—The following papers were read:—On the heat liberated by chemical combinations in the gaseous state; anhydrous acid and water, by M. Berthelot.—On the equivalent of organic compounds, by M. Berthelot.—On a new anthophyllite of Bamle, in Norway, by M. Des Cloizeaux. Anthophyllite (in this specimen) presents new similarities to amphiboles; like them, it may contain a large proportion of aluminium (twelve per cent.) in varieties of homogeneous appearance, and it has a marked tendency to pseudomorphism.—Reply to observations of M. Mouchez (continued), by M. Villarceau.—On an apparatus called a central obturator-inflamer, capable of adaptation to all cartridges, by M. Cosson. The inflamer is a cylindro-conical case forming an air-chamber, in which the priming explodes; the gases are distributed by slits in the top of it. The obturator is a convex sheet iron shield with serrated border, and a central hole for the inflamer. The combination is placed in the socket of the cartridge, and the obturator then flattened, so as to firmly and hermetically close the base. Among other advantages, it is claimed to improve the range, increase the penetration, diminish recoil, and preserve the cartridge-sockets intact.—H. M. Don Pedro d'Alcantara was elected foreign associate in room of the late M. Ehrenberg. He obtained thirty-nine votes, M. Van Beneden one.—On the state of the vines of Mezel, near Clermont Ferrand, according to a report of M. Truchot, by M. Aubergier.—Anthogenesis in subterranean pucerons of the Gramineæ, by M. Lichtenstein.—On a means of avoiding the resonance of the seventh minor harmonic of the fundamental in the series of grave cords of the piano, by M. Dien. The damper (which is the cause) is allowed to act in its ordinary place, but it moves, simultaneously, a lever having at its upper end a second damper, which touches the cord at a quarter of its length, and causes resonance of the double octave, destroying completely that of the defective triple minor seventh.—Historical remarks on the theory of motion of one or several bodies, of constant or variable forms, in an incompressible fluid, &c. (continued), by M. Bjerknes.—New method of elimination of arbitrary functions, by M. Minich.—On a solar spot observed during the month of June, 1877, by M. Tacchini.—On the 3rd a small spot (the only one) appeared in the east, and gradually enlarged to 40s., by the 7th continuing of this size (some small spots which presently appeared with it ever changing) till it was near the border on the 13th. On the 14th, when projection and photography revealed hardly a trace of the group, the spectroscope discovered very lively chromospheric flames; higher up, several oblique fragments, evidently from violent eruption, eruption flames on the right, and lastly, a nebulous chromospheric mass, well illuminated and slightly divergent. There was constant commotion of matter. The case is cited as against M. Janssen's view.—On a glass of phosphate of lime, by M. Sidot. It is perfectly transparent, very refringent, (index 1·525), can be cut like ordinary glass, is dissolved by oxides of cobalt and chromium, is not attacked by cold acids, but is attacked by boiling acids and by potash, is not attacked by hydrofluoric acid.—On the dissociation of carburets by means of palladium wire, and on the relation of these facts with actions of presence or catalytic phenomena, by M. Coquillion. To analyse carburets with palladium wire there must be enough oxygen to work complete combustion of the constituent carbon and hydrogen.—On the determination of potash, by M. Carnot.—On the nickelised iron of Santa Catharina, in Brazil, by M. Guignet. The bed is now exhausted; it is thought to have been a meteorite with weight not under 25,000 kilogs. (the Ovifak block was 20,000 kilogs., and so was that of Durango, Mexico, found in 1805). The last portions had very little nickel.—Description of several minerals, by M. Pisani.—Reply to objections raised by M. Naudin against the project of an interior sea in Algeria, by M. Roudaire.—Investigation of the free acids of gastric juice, by M. Richet. Pure gastric juice contains almost only mineral or similar acids; organic acids increase when, left to itself, it ferments. Aliments increase by 20, 50, and even 70 per cent., the acidity of liquids in the stomach. The mineral acid continues predominant so long as there is no putrefaction.—On lymph as an agent of propagation of vaccinal infection, by M. Raynaud. The observations are somewhat discordant, but the virulence of lymph from a vaccinated region is demonstrated.—On the pebbles of a hill near Vailly, in the department of Aisne, by M. Robert.

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